

PATENT  
Docket No. 10400-000141/US  
IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant(s): Stig HOLM et al.  
Int'l Application No.: PCT/SE2003/001176  
Application No.: **NEW APPLICATION**  
Filed: February 11, 2005  
For: METHOD AN DEVICE FOR PRODUCING BIOGAS

**LETTER**

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February 11, 2005

Sir:

Amended sheets are attached hereto (which correspond to Article 19 amendments), as required by 35 U.S.C. § 371(c)(3). The Article 19 amended sheets are incorporated in the included Preliminary Amendment.

Respectfully submitted,

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CLAIMS

1. A method of producing biogas by anaerobic diges-  
5 tion of organic matter, c h a r a c t e r i s e d by  
grinding organic matter,  
mixing the organic matter with a liquid to form a  
slurry with a dry solids content of 15-45% by weight TS,  
feeding the slurry to a tank reactor (2; 102; 202;  
10 302) and, in the tank reactor, contacting the slurry with  
biogas-producing bacteria for digestion under anaerobic  
conditions, and

digesting the slurry in the tank reactor (2, 102;  
202; 302) at a dry solids content of 5-10% by weight TS  
15 while producing biogas.

2. A method as claimed in claim 1, in which the  
ground organic matter is mixed with a liquid to form a  
slurry with a dry solids content of 20-40% by weight TS.

3. A method as claimed in claim 1 or 2, in which at  
20 least half of the total dry solids of the slurry origi-  
nates from grain and/or dried grain offal and/or mixtures  
thereof.

4. A method as claimed in claim 3, in which the  
grain is essentially present in the form of whole and  
25 screened grains.

5. A method as claimed in any one of the preceding  
claims, in which organic matter of a type other than the  
first-mentioned organic matter is also digested in the  
reactor (202; 302), at least 10% by weight of the total  
30 dry solids introduced into the reactor originating from  
grain and/or dried grain offal included in the first-  
mentioned organic matter.

6. A method as claimed in any one of the preceding  
claims, in which the liquid with which the organic matter  
35 is mixed is essentially pure water.

7. A method as claimed in any one of claims 1-5, in  
which the liquid with which the organic matter is mixed

at least partly is digested sludge which is removed from the reactor (2; 102; 202; 302).

8. A method as claimed in any one of the preceding claims, in which the organic matter is dried to a dry solids content of at least 70% by weight TS before being ground.

9. A device for producing biogas by anaerobic digestion of organic matter, characterised in that the device (1; 100; 200; 300) comprises a premixing tank (18; 118; 218; 318) for mixing ground organic matter with a liquid to a slurry with a dry solids content of 15-45% by weight TS and a feed pipe (26, 4; 126, 104; 204; 304) for feeding the slurry to a sealable, essentially gas-tight tank reactor (2; 102; 202; 302) for digesting the slurry at a dry solids content in the tank reactor (2; 102; 202; 302) of 5-10% by weight TS, said tank reactor (2; 102; 202; 302) having an agitator (10; 110) for agitating the matter in the tank reactor (2; 102; 202; 302), an inlet (4; 104; 204; 304) for slurry from the premixing tank (18; 118; 218; 318) and outlets (6, 8; 106, 108; 206, 208; 306, 308) for produced biogas and formed digested sludge.

10. A device as claimed in claim 9, in which a mill (14; 114; 214; 314) is arranged for grinding the organic matter before being introduced into the premixing tank (18; 118; 218; 318).

11. A device as claimed in claim 9 or 10, in which a supply pipe (122; 222) is arranged for feeding digested sludge from the reactor (102; 202) to the premixing tank (118; 218).